

## UNITED KINGDOM - STATUS REPORT

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### INTRODUCTION

I am delighted to be here in Nagoya today to present the United Kingdom's Status Report at this ESV Conference.

For this presentation I intend mainly to concentrate on some of the key areas of UK work, rather than go into the detail of the full range of UK activities in the vehicle safety field. In addition I would like to touch on some themes and issues which relate to our work. These aspects range from our overall road safety strategy to sections covering research, consumer information, public awareness, large vehicles, secondary safety, and some aspects of advanced technologies. I would also like to take a brief look at some of the challenges that lie ahead.

### Great Britain Road Safety Targets

In March 2000 the Government's road safety strategy was set out in "Tomorrow's Roads: Safer for Everyone". This set new targets for casualty reduction by 2010 compared with the Great Britain (that is England, Scotland and Wales together) average of casualties for 1994 to 1998.

- 40% for all road deaths and serious injuries
- 50% for child (0-15 years) road deaths and serious injuries
- 10% for the rate (by vehicle kilometres) of slight injuries

These are challenging but achievable targets. They, and the strategy, will be reviewed every three years to ensure that sufficient progress is being made. The first of these reviews will be carried out in 2003/4.

### Research

The UK devotes significant resources to its national transport research portfolio every year and the vehicle safety programme is the largest of these. This programme currently covers about 50 separate projects into which we invest several million pounds each year.

It is worth emphasising the importance we place on high quality accident research. About 30% of our vehicle safety research budget this year is being fed into accident research projects such as the well-established Co-operative Crash Injury study, and our

more recent On the Spot accident investigation project which uses rapid response teams to investigate accidents as soon as possible after they occur, before much of the vital information is lost. These projects help build up a valuable long-term picture of accident and injury patterns, and provide a firm evidence base to identify areas for further improvements in car design and safety overall. There is a perception that most of the low-hanging fruits of vehicle safety, such as front and side impact protection and improved restraint systems, have already been picked, (although these fruits may have seemed quite high to us at the time we picked them). We believe that there are still sizeable benefits that can be achieved, although we may need to work harder to justify to governments, manufacturers and consumers, that the extra efforts involved in reaching for the higher fruits are worthwhile. Sound research-based evidence is essential to make our case for further improvements, and building up a database based on accident research has a vital role to play.

We have long recognised the value of collaborative international research. We are committed to channelling our research contributions to the longer term work of EEVC and IHRA activities, as well as supporting the often more immediate issues that arise in setting motor vehicle standards in the European Union and Economic Commission for Europe (ECE). We also welcome co-operation with manufacturers. Our Co-operative Crash Injury Study; for example, benefits from a wide support base. In the latest phase of this project, the number of participating vehicle, system and component manufacturers has increased to seven, including two Japanese companies. This demonstrates the value which manufacturers place on obtaining high-quality real-world accident information in the development of their products. We also have informal links with manufacturers across the whole range of our research programme, and I will be mentioning a few more examples later in this presentation.

### Consumer Information

Giving consumers objective information on how cars perform in crash tests, and potentially in other areas, is an important mechanism which supplements the bedrock of legislative standards.

**Euro NCAP:** Euro NCAP has had a significant effect over the last six years. There has been wide media coverage and, in turn, a greater awareness of car safety among the general public. I am pleased to say that manufacturers have responded extremely well in terms of occupant protection, and since the

last ESV we have started to see cars with 5 star ratings. Sadly we have still to break the 4 star barrier for pedestrian protection. But we are getting much closer to the introduction of pedestrian proposals in Europe, and I am hopeful that this will prompt improvement in both the typical and the best Euro NCAP pedestrian scores, even before 2005 when the European Commission proposals are intended to begin coming into effect.

**Primary NCAP:** While Euro NCAP assesses the secondary safety aspects of vehicles, the UK is investigating the feasibility of an NCAP that assesses primary safety – PNCAP.

UK research covers five areas – braking/stability, lighting, visibility, handling, and ergonomics. The full research programme will take until 2004 and include testing a range of vehicles, many supplied by manufacturers.

Work is well advanced in Braking/Stability, and Visibility. Early advantage will be taken of this. In 2003, the UK research programme intends to begin testing one class of car for these two measures of primary safety. This will produce information both for dissemination and to prove the suitability of the proposed methodology.

The final report will contain recommendations on how to assess, how to present the results, and how the work should relate to EuroNCAP. Japan already publishes data on stopping distance and USA has an active interest in this area so our researchers have been asked to try to maximise contact with these programmes.

The Euro NCAP organisation is also discussing the suitability of expanding into the primary safety areas, and the UK research is proving very helpful in contributing to this discussion

**Child safety** is another area where we hope to fund research with other partners. A child restraint is one of the most important investments for a parent and we feel it is important that consumers have access to information on the best products available to help them to make an informed decision when purchasing a child restraint.

### **Public Awareness and Attitudes**

The UK public is not only interested in consumer information; they also take a close and often acute interest in more general safety issues. There is always debate regarding the extent to which

government should intervene in matters of personal safety and a demand that once we do intervene, we get it right! Issues of individual freedom and accusations of excessive state interference often surface. There are many areas where history has shown that legislative intervention has been hugely justified. Primary examples of this are compulsory seat belt wearing and compulsory motorcycle helmet wearing, which have now been in force in the UK for 20 and 30 years respectively, and are almost universally accepted by the British public. There are other cases, however, where the arguments for increased safety versus those for retaining individual freedom are more finely balanced. An example concerns specialist cars built in low volume; not just the high-priced exotic cars but also more modest cars made by small manufacturers or individuals. Of course these have to meet basic safety standards, but can the imposition of the whole range of ever more complex safety regulations be justified? Are we sure that legislation is being applied in a proportionate way, so that consumer choice is not unnecessarily restricted?

Other examples of individual choice could include the ability of a pedal cyclist to choose whether or not to wear a helmet, or a motorist's ability to have an airbag disconnected if they had a genuine belief that the presence of an airbag could increase the risk for certain seating positions. Often standard setting is rightly an international affair, but this can be remote to the pressures that apply at national level where the interface between the public and the regulator is more direct. We need to be responsive to the concerns of the individual, and very confident of the level of benefit and the timing to enforce a measure.

### **Large Vehicles**

Our current research on large vehicles largely concentrates on their effect on other road users. Existing requirements on sideguards and spray suppression date back to the 1980s. UK research will look at existing and new types of spray suppression and consider the benefits of fitting better sideguards with a smooth surface. It is anticipated that a vehicle fitted with more aerodynamic and effective sideguards will not only produce a fuel saving benefit from reduced drag, but should also achieve reductions in road casualties. Research will also look at front and rear underrun so that an holistic approach can be taken. Finally, but no less importantly, we are also investigating how accidents caused by poor visibility from large vehicles can be avoided.

## Car Secondary Safety

We are now starting to reap the casualty savings from the secondary safety initiatives that have been introduced recent years. Evidence of this will, I believe, be amply demonstrated by at least one of the papers to be included in the technical presentations. However, there is still much that can be done to make further improvements, and perhaps it is worth spending a little time to examine some of these.

**Structural integrity.** The UK continues to support research in the areas of front and side impact and compatibility. In side impact, work has been done to support a design - based specification for the mobile deformable barrier (MDB) which has recently been adopted for use in Europe. Research on the next generation of MDBs to reflect the current fleet is already well advanced with a new EEVC/IHRA barrier face about to enter the final stages of development, prior to validation. The UK has also contributed to the evaluation of the new side impact dummy ES2 and is involved in a similar exercise with WorldSID.

In addition, the UK's significant research effort on vehicle compatibility has been ongoing for several years. This is an important issue and one where progress is very dependent on research. The emphasis has been on frontal impact protection. Compatibility issues can arise in all types of impact so the development of measures should yield valuable and wider benefits. We have been looking closely at these nationally and through our work with the EEVC. Recently an assessment measure known as the Homogeneity Criterion has been developed to interpret objectively the output data from a high-resolution load cell wall used in a full width test with a deformable element. The criterion shows promise and an initial trial found it ranked vehicles in terms of their expected structural interaction.

**Pedestrian Protection:** This has been one of the most hotly debated vehicle safety issues over the last few years, both nationally and in Europe. The UK has been actively involved in research on this topic for a quarter of a century. There is every possibility that by the time we next meet for ESV, all new car designs in Europe will be meeting the first phase of new pedestrian protection requirements. We estimate that full implementation of the first phase will reduce killed and serious injuries by about 12% (about 1100 people a year in the UK alone) Implementation of the second phase should increase this percentage to almost 20% (about 1900 people each year in the UK). Meeting this second phase will present manufacturers

with further technical challenges which can be met either through careful body engineering, or by introducing features such as pedestrian airbags or deployable bonnets, activated by advanced pedestrian sensors or other technologies. In the UK we have been working with manufacturers and research organisations to examine the feasibility of some potential systems, and I am sure that industry, with its record of innovation, will be able to come up with many others.

**Child Restraints:** ISOFix is one of the few technical areas to be specifically mentioned in our Road Safety Strategy. This reflects the importance we place in achieving our 50% casualty reduction for children.

The UK has been a keen supporter of the development of the ISOFix concept, both through research and in pushing for agreement on important changes to the ECE Regulations in Geneva. We are confident that these amendments, agreed in the December Working Group on Passive Safety (GRSP), will result in a valuable improvement in child safety when travelling by car, through improved protection and reduced potential for incorrect use.

**Advanced Restraint Systems:** To complete the theme of secondary safety, there is an increasing recognition of the fact that we are not all the same. Approval testing has traditionally been geared towards the 50<sup>th</sup> percentile male. Not many of us fall into this category. Yet there is some evidence that the further you are away from the average height, the greater the risk of injury in an accident. Some manufacturers are now producing vehicles with adaptive restraint systems which can cater for taller and shorter people. At the last ESV there was a report on UK collaborative research which examined the benefits of such systems, as part of a wider review of advanced adaptive systems. To follow up this work, we are pleased to be to be involved with the EU PRISM project. This brings together a number of European manufacturers and research organisations to take a closer look at the benefits obtainable from such systems.

## Advancing Vehicle Technology

I am sure that this conference will highlight a number of areas where manufacturers are pushing the boundaries of technology. What is the role of Government in this process? There is a limit to the extent to which Governments can invest directly in long term technological research, but we can identify the areas where technology can provide the greatest benefits and encourage investment and research in

these areas. In particular, the UK Foresight Vehicle Programme is a major initiative by Government to bring together UK resources and expertise to create components and systems for the vehicles of the future. Over 250 separate organisations are actively involved, including vehicle and component manufacturers, universities, industrial research organisations along with national and local government.

The main aim of this programme is to develop, demonstrate and promote technology for vehicles that will be available to the mass market by 2020. This new technology will work towards targets that include:

- Increasing safety;
- Reducing congestion, and
- Improving air quality.

Our involvement in Foresight Vehicle helps balance the policy driven aspects of the vehicle engineering research programme with opportunities to invest in innovative blue-sky type research leading to advanced technologies for the 21st century. In pursuing this balanced approach, we have committed over £4.5M in the last 5 years.

Examples of research areas in the current Foresight programme include:

- The use of a new composite, impact energy absorbing materials that can adapt their stiffness, to cope with different types of impact,
- The application of short-range sensors to detect and distinguish pedestrians, anticipate vehicle impacts and pre-arm occupant and pedestrian protection systems (such as airbags) to reduce injury.
- The investigation of ways of in-car scanning of occupants' bone density. This data can be used to optimise air bag deployment and safety belt pre-tensioning, and minimise the risk of injury to occupants in the event of a crash. Bone density is directly related to its ability to withstand fracture and reduces as people age. Older people represent an increasing proportion of the vehicle occupant population, and there would be benefits if this could be taken into account in the design of future restraint systems.

This collaborative approach enhances our research outputs, helps stretch the research funds, and, very importantly, increases the chances of a successful outcome by facilitating the maximum degree of

common understanding which underpins later agreement by all involved.

### **Intelligent Speed Adaptation (ISA)**

Inappropriate speed is a factor in a significant number of accidents. UK research reported at the last ESV predicted that equipping cars with an ISA system that allowed a vehicle complete freedom up to a specified speed limit would result in a reduction in fatal accidents by around 60%. This prediction has been supported by evidence from accident statistics near speed cameras and ISA trials in Sweden.

By 2005 the UK will have assessed the public acceptance of ISA by analysing a wealth of data from 4 sets of 20 drivers using identical ISA equipped cars for 6 months each. In addition the particular requirements of commercial vehicles and motorcycles will be investigated by the construction and testing of one ISA equipped example of each.

This research will contribute to the European discussion on ISA which includes research in several countries and the involvement of the European Commission.

### **Transport Telematics (Broader Activities) .**

Although ESV has always been primarily about vehicles, we cannot ignore the effects of technological developments in the transport infrastructure and in communications between the vehicle and infrastructure. The area of transport telematics is a rapidly evolving one, and I list below three examples of UK activity within this subject.

#### **Co-operative Vehicle-Highway Systems (CVHS)**

This future concept of communication between individual vehicles and the roadside infrastructure has the potential to bring about significant road safety and network efficiency benefits. The UK is exploring the detailed feasibility of and future deployment opportunities for CVHS. This work will take account of potential barriers, pitfalls and dis-benefits of CVHS as well as examining in depth the potential benefits.

**Electronic Vehicle Identification (EVI).** The UK is investigating the detailed feasibility of Electronic Vehicle Identification, not only as a possible solution to insecurity of vehicle identification systems, but also in the context of broader policy objectives including improving road safety and reducing road traffic congestion. The work will consider all of the related technical, legal and privacy issues as well as

the costs of implementation. The UK is chairing the steering group for the ERTICO EVI initiative that is supporting the European Commission 's activity in this area.

**Driver information systems.** The increasing availability of driver support systems such as intelligent cruise control, highlight the importance of understanding the human factors aspects of in-vehicle equipment. The UK has pioneered research on the evaluation of such equipment and recently published updated design guidelines for industry to use.

### **Future Directions**

As I mentioned earlier in this presentation, many of the safety area's 'easy' pickings have now been implemented. Significant advances in restraint systems, vehicle structures, vehicle stability and braking have been made over recent years, and improvements in this area will continue, though possibly not at the same pace. Compatibility and pedestrian protection are important extra areas. But where are the big savings for the future? Do we concentrate our resources on incremental improvements in existing areas? Or do we focus on advanced accident prevention, looking at the role of the transport systems rather than the individual vehicle? We will not resolve these questions this week, and it may be impossible to obtain a world-wide consensus on any future vehicle safety strategy due to differing circumstances. However, I believe the ESV forms a key element in determining the degree to which we arrive at a common picture of what is possible down the road of safer vehicles, even if we sometimes have differing views on how far we want to travel along it.